

computing device **200** having the singular I/O port **224**, the processing unit **236**, the memory **238**, and one or more air-moving apparatuses **246** positioned within the enclosure **206** and adjacent the rear-facing wall **214**. Each air-moving apparatus **246** can be positioned near or adjacent to respective vents **240a**, **240b** to draw air along an airflow pathway. The airflow pathway can extend from outside of the enclosure (as designated by the reference arrows **248** in FIG. 4B), through a first vent **240a**, and into the internal volume of the enclosure **206** (as designated by the reference arrows **250** in FIG. 4B). The airflow pathway can extend from the internal volume (as designated by arrows **252** in FIG. 4B), through a second vent **240b**, and into an ambient environment adjacent the enclosure **206**.

[0083] In some examples, the one or more air-moving apparatuses **246** can be one or more fans, such as a fan having multiple blades attached to an electric motor. The air-moving apparatuses **246** can be operably coupled to the processing unit **236** and receive electrical power from the I/O port **224**, the processing unit **236**, the power supply, or a combination thereof. The processing unit **236** can activate or run the air-moving apparatuses **246** at the occurrence of an event, such as meeting or exceeding a temperature threshold within or at any location on the enclosure **206**. In some examples, the air-moving apparatuses **246** can be activated or otherwise operate when a particular computing component reaches a predetermined temperature, for example, when the processing unit reaches or exceeds 60° C.

[0084] As illustrated in FIGS. 4A-4C, the airflow pathway or pathways can extend above or adjacent to one or more computing components within the enclosure **206** to draw or move heat from the computing components, while also supplying cooler ambient air to the internal volume or inner cavity of the enclosure **206**. The rate at which air is drawn or moved along the airflow pathway can be at least partially based on an operational status of the one or more air-moving apparatuses **246**. For example, the air-moving apparatuses **246** can be operated at a relatively low output mode that moves air along the airflow pathway at a rate of about 2 cubic feet per minute (CFM) to about 50 CFM. In a relatively moderate output mode, the air-moving apparatuses **246** can move air along the airflow pathway at a rate of about 50 CFM to about 200 CFM. In a relatively high output mode, the air-moving apparatuses **246** can move air along the airflow pathway at a rate of about 200 CFM or more.

[0085] In some examples, the base **220** can include a thermally conductive material. For example, the base **220** can be manufactured at least partially of a metal or other material that distributes or spreads heat substantially throughout the mass of the base **220**. The base **220** can distribute heat generated, for example, by the processing unit **236**, which can be in thermal communication with the base **220**. The heat can be distributed over a larger surface area of the base **220** to more efficiently regulate temperatures within the enclosure **206** by allowing the heat to dissipate over a larger surface area.

[0086] Materials for the base **220** or other parts of the enclosure **206** can be chosen based on their thermal conductivity. The thermal conductivity of a material can be determined based on Equation 1 shown below, wherein k represents the thermal conductivity of the material, Q represents the heat flow, L represents a length or thickness of the

material, A represents a surface area of the material, and T_2 and T_1 represent a temperature gradient.

$$k = Q * L / A (T_2 - T_1)$$

Equation [1]

[0087] Some non-limiting examples of thermally conductive materials are copper, aluminum, brass, steel, and bronze. The thermal conductivity of the base **220** can be less than 60 W/mK, from about 60 W/mK to about 400 W/mK, from about 100 W/mK to about 300 W/mK, from about 200 W/mK to about 250 W/mK, or greater than 400 W/mK.

[0088] FIG. 4C shows a side section-view of the computing device **200** taken through the section line **4C** of FIG. 4A. More specifically, FIG. 4C shows a back-half or rear-half **254** of the computing device **200**. The section-view in FIG. 4C depicts an example of the computing device **200** having the I/O port **224**, the processing unit **236**, and the memory **238** positioned within the enclosure **206** and adjacent the rear-facing wall **214**. In some examples, a majority of the volume or the majority volume within the enclosure **206** can be formed or positioned adjacent the rear-facing wall **214** to provide space for the one or more computing components and adequate headspace for the components to accommodate airflow within the enclosure **206**. Conversely, a minority volume can be formed or positioned adjacent the forward-facing wall **216**. A plane P extending between the first and second side walls **210**, **212** can separate the minority volume from the majority volume. The plane P can bisect the first and second side wall **210**, **212** in half. The position of the one or more computing components can be biased toward the rear-facing wall **214** (i.e., the majority volume). For example, the one or more computing components can be wholly positioned within the back-half or rear-half **254** of the enclosure **206**, as shown in FIG. 4C. In some examples, the computing components can be positioned within a rear-third or rear-quarter of the computing device **200**.

[0089] Any number or variety of components in any of the configurations described herein can be included in the computing device. The components can include any combination of the features described herein and can be arranged in any of the various configurations described herein. The arrangement of components of the computing device having an enclosure described herein, and defining an internal volume, can apply not only to the specific examples discussed herein, but to any number of embodiments in any combination. An example of a computing device including components having various features in various arrangements is described below, with reference to FIG. 5.

[0090] Any number or variety of components in any of the configurations described herein can be included in the computing device. The components can include any combination of the features described herein and can be arranged in any of the various configurations described herein. The arrangement of components of the computing device having an enclosure described herein, and defining an internal volume, can apply not only to the specific examples discussed herein, but to any number of embodiments in any combination. Another example of a computing device including components having various features in various arrangements is described below, with reference to FIG. 5.

[0091] FIG. 5 shows a computing device **300** and an ancillary input device (e.g., track pad **302**). The computing device **300** can have some or all of the same components and functionality as the computing devices previously disclosed herein. For example, the computing device **300** can have the